



## Origin-Destination Studies

An origin-destination study is used to determine travel patterns of traffic on an installation during a typical day. They are useful in assisting long-range traffic planning, especially when there are substantial changes anticipated in the installation mission or strength.

This is a study to determine and analyze trips. Trips are defined as one-way movement, from where a person starts (origin) to where the person is going (destination). Trips are further classified as follows:

**Internal**— From one point on post to another point on post.

**External**— From on-post to off-post or vice versa.

**Through**— From off-post to off-post, by going through the installation.

## Conducting Studies

There are five methods which can be used in conducting these studies; so this decision must be made before planning can be completed.

### Planning

The number of personnel needed to conduct this study depends on the method of study used.

A sampling of the person's driving (or making trips) will be taken. This sample is then multiplied

to represent the total population. Because of this, a true representation of drivers must be made. The greater the number of samples, the more accurate the study will be.

Motorists should be made aware in advance of the reasons for the study. Information concerning the study should be disseminated to the public.

## Recording

A sample of questions which can be used in an origin-destination study is shown below:

1. How do you normally travel to and from your place of duty?

Drive car  
Passenger in car  
Public transit  
Walk

2. If you drive a car please answer the following:

a. How many people are in the car (include self)?

☐ One    ☐ Two    ☐ Three  
☐ Four    ☐ Five    ☐ Six

b. Where does your trip originate?

Street Address:  
City:

c. Through which gate do you enter the post?

☐ Main Gate    ☐ West  
☐ Sixth St. Gate

d. Where do you park your car during duty hours?

Give parking lot number, nearby building number, or nearest intersection:

e. What is your place of duty?

f. If in car pool, what is on-post destination of other members of car pool?

There are five methods by which an origin-destination study can be made. These are:

1. **Registration Questionnaire**—Driver lists are obtained from the vehicle registration form and each is sent a questionnaire at his place of duty with a return date requested.

2. **Post Card**—A prepaid post card with the questionnaire on it is distributed to all drivers entering the installation during a given time. A traffic volume count is made at the time the cards are distributed.

3. **Roadside Interview**—This method requires advance publicity and a greater number of personnel. Uniformed MPs should conduct the interview. Considerations should include:

Interview 50 percent of vehicles during non peak hours.

Interview 25 percent of drivers during peak hours.

Insure stations are visible and safe.

One interview should not take more than 40 seconds, and there should not be more than five (5) interviewers in a file (one lane).

Approximately 300 drivers can be interviewed per hour. Stations do not have to be operated at the same time.

A manual count of traffic is made by hour, direction and type of vehicle. By doing this the sample can be expanded into a 24-hour analysis.

4. **Tag on Car**—This is a limited study good for studying through trips. It is conducted by having all cars counted when they enter the installation. At stations just inside the entrance gates, MPs stop vehicles and affix a piece of colored tape (different for each station) to the car's front bumper. At exit gates of the installation, a tally of cars with each colored tape is made. It provides a rough estimate of through trips on the installation. It's necessary for each installation entrance and exit to be manned during this study.

5. **Comprehensive Home Interview**—This method is performed by other governmental organizations. It is not normally done on a military installation unless it is near a large city that is under review. It provides the most detailed data.

The guide to origin destination studies table can be

helpful in choosing the best method for your studies.

Origin-destination studies may be augmented with the following studies:

**Land Use Study**— This study of an installation and the surrounding area concerns residential, industrial, commercial and recreational land use. See AR 210-20 for more information.

**Growth Trends Study**— This study concerns trends in population, land use and highway travel. It is made in conjunction with planning agencies, utility companies and highway officials. Population trends are classified as mili-

tary/civilian office workers, civilian maintenance, contractors, hospital personnel, service personnel and visitors.

**Off-Post Route Improvements**— Studies of new routes or changes in routes off post by local officials should be considered.

## U s e s

Information from these studies can be used to anticipate present and future traffic patterns,

No.	Item	Type of Survey				
		a	b	c	d	e
		Address lists or questionnaire	External post card	Roadside interview	License plate or tag-on-car	Home interview
1	Applicability -----	On most installations. When work trips dominate traffic.	When through trips are significant and internal trips are not significant.	Supplement to on-post questionnaire. When through trips are significant and internal trips are not significant.	Determining proportions and patterns of through traffic. For specific movements in dense area. Determining potential bypass traffic.	Only in conjunction with Bureau of Public Roads and State highway department.
2	Method and place of interview.	Distribute questionnaire at place of work or duty.	Distribute post cards on roadway at or near entrance gates.	Interview on roadways at or near entrance gates.	Mark cars and/or check license plates at or near entrance gates.	Sample interviews in selected dwelling units.
3	Size of Sample ----	Variable -----	25-50% return desirable.	20% of total two-way traffic approximate minimum (more on low volume roads).	Variable -----	Minimum of 5% to 20% depending on size of adjacent urban areas.
4	Means of sample control.	Relate interview or responses to total population in each area interviewed.	Relate returns to total traffic at each location.	Relate returns to total traffic at each location by hours of the day.	Relate cars tagged to cars counted at each location.	Preselect size or sample; "screenline" check of data.
5	Accuracy -----	Approx. 75-95% (estimated).	80-90% Less uniform distribution of returns.	80-90% ----- Good distribution of returns.	Good for through trips.	85-100% Uniform distribution of returns.
6	Method of data processing.	Machine or manual ---	Machine -----	Machine -----	Manual -----	Machine
7	Costs -----	Minimum -----	Substantial -----	Substantial -----	Minimum -----	Maximum
8	Advantages -----	Minimum cost -----	Minimum interference to traffic.	Control of sample -----	Low cost -----	Accuracy
		Large sample ----- No interference to traffic.	Adaptable to peak hours. Done in 1 day -----	Accuracy of trip distribution.	Provides simple answer to specific problem.	Completeness
9	Disadvantages -----	May not fully reflect nonwork travel. Does not detect through trips.	Does not fully reflect internal trips. Incomplete control of response.	Interferes with traffic in peak hours. Does not fully reflect internal trips.	Limited to specific problems only. Difficult to match vehicles (accuracy).	Greater cost, time, complexity.

especially the demand to be placed on the road network in the future. When compiling data the percentage of interviewed should be converted to represent a 24-hour day. The studies provide information concerning:

The number of trips into, within, and through an installation; and time of day, mode of travel and number of occupants in a vehicle during a trip.

Present travel patterns; areas that generate the most traffic; and efficiency of traffic lanes concerning flow and safety.

Evaluation of the general road plan and present or foreseeable problems.

Determining need for revised flow patterns, alternate routes, new streets and parking areas.

Help determine parking patterns in major functional areas of the installation.

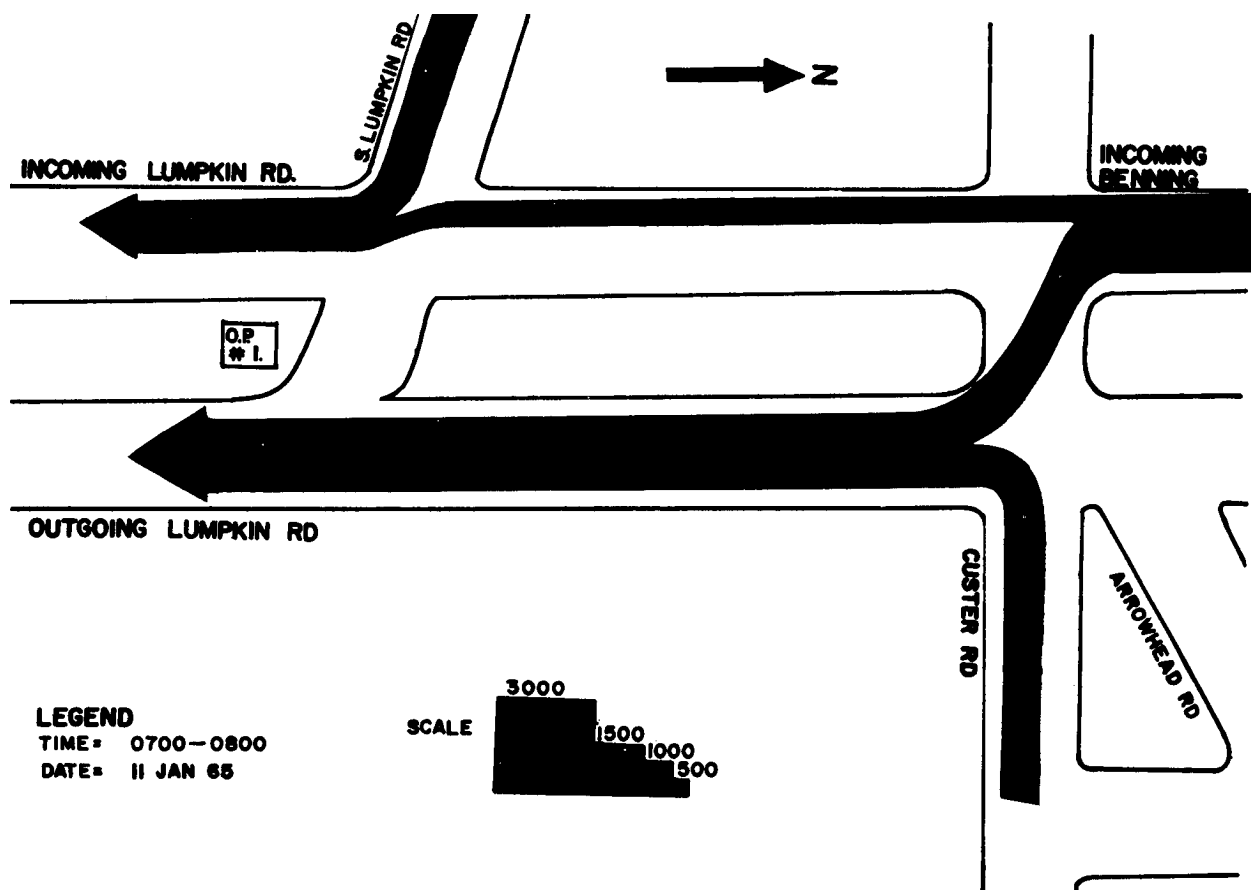
Future travel patterns can be determined by being aware of future projects or changes. By

anticipating changes, potential traffic problems can be avoided. This might include changes in population, new residential areas or service facilities.

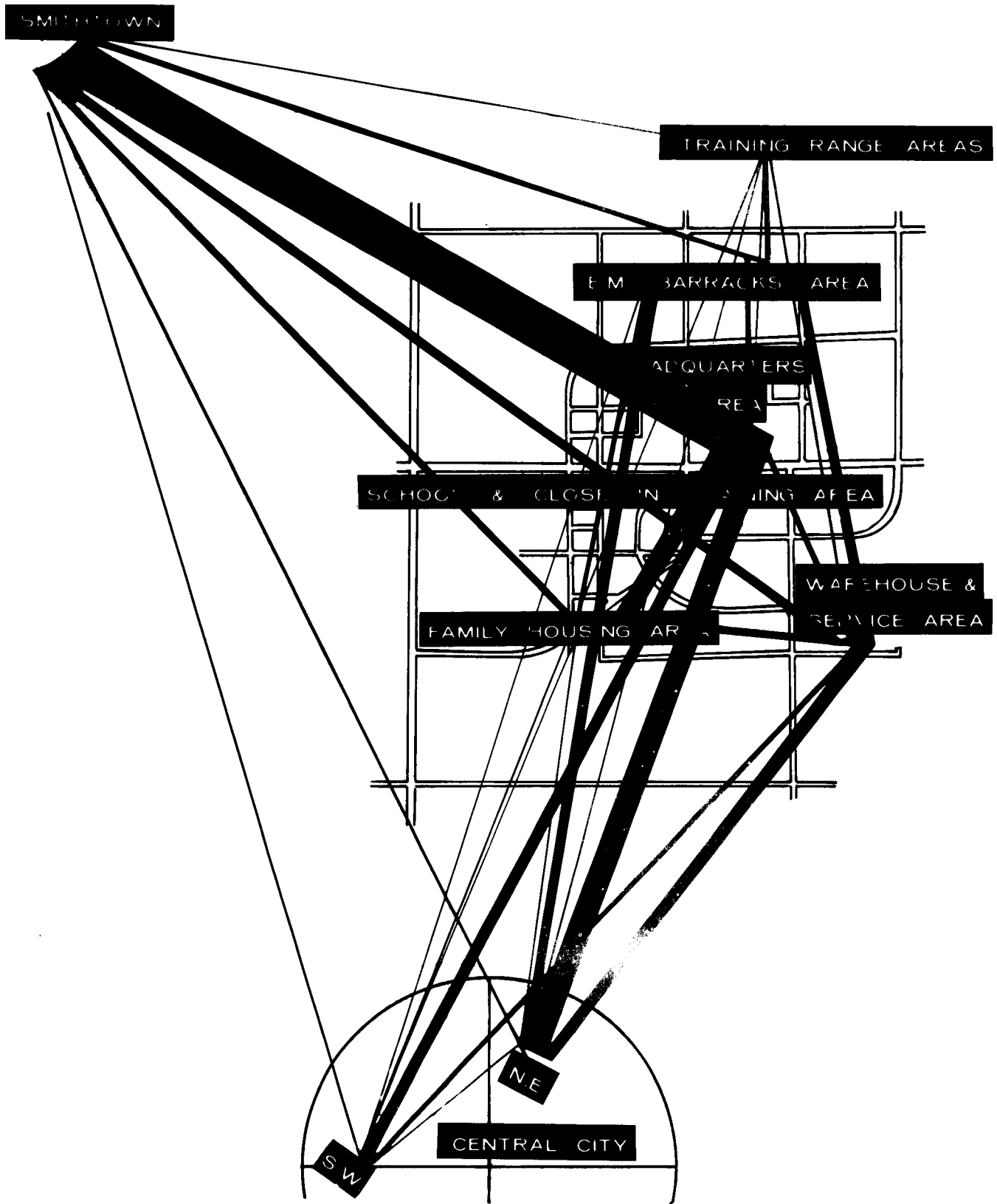
## Graphics

There are several methods to graphically portray information obtained from these studies. Two examples are the line desire map and the route volume map (pages 126 and 127). In the line desire map, each dark line or bar, of varying widths, represents traffic volume from one key area to another. The line desire map locates pictorially the major traffic patterns.

Another method of showing this information is by bars signifying volume superimposed on an actual road map. This is a route volume map.



*Route Volume Map*



*Travel Desires at a Military Installation*

